

Crustacea Decapoda : Species of the genus *Munida* Leach, 1820 (Galatheidae) collected during the MUSORSTOM and CORINDON cruises in the Philippines and Indonesia

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ABSTRACT

Fifteen species of galatheid crustaceans belonging to the genus *Munida* Leach, 1820 are reported from the Philippines and Indonesia. Six of these species are described as new : *M. analoga*, *M. gillii*, *M. minuta*, *M. parvula*, *M. pusiola* and *M. sacksi*.

RÉSUMÉ

Crustacea Decapoda : Espèces du genre *Munida* Leach, 1820 (Galatheidae) récoltées lors des campagnes MUSORSTOM et CORINDON aux Philippines et en Indonésie.

Quinze espèces de crustacés Galathéides, appartenant au genre *Munida*, sont signalées des Philippines et d'Indonésie. Six d'entre elles sont nouvelles : *M. analoga*, proche de *M. squamosa* Henderson, 1885, s'en distingue par l'armature des antennes et la forme des dactyles des pattes ambulatoires. *M. gillii*, proche de *M. babai* Tirmizi & Javaid, 1976, se caractérise par l'armature des doigts des chélipèdes. *M. sacksi* se distingue de *M. africana* Doflein & Balss, 1913, par le bord frontal, la taille et le nombre des épines des antennes et les troisièmes maxillipèdes. *M. pusiola* et *M. minuta* se différencient des autres espèces par l'ornementation des chélipèdes. *M. parvula*, proche de *M. inornata* Henderson, 1885, s'en distingue par l'armature des segments abdominaux et des sternites thoraciques et par les épines des doigts des chélipèdes.

INTRODUCTION

The genus *Munida* Leach, 1818, is represented in the Philippines and adjacent waters by more than 30 species (BABA, 1988). This genus has received some attention during recent years (MACPHERSON & DE SAINT-LAURENT, 1991; MACPHERSON, 1991; TIRMIZI & JAVED, 1992) and the description of some new species has pointed out its high diversity and the necessity for a thorough revision of several problematic species (e. g. *M. japonica*, *M. curvirostris*). During the MUSORSTOM and CORINDON cruises to the Philippines and Indonesia (FOREST, 1981, 1986, 1989; MOOSA, 1984), numerous representatives of this genus were collected. This abundant material is published in two parts. The first part, by MACPHERSON & BABA, 1992, includes those species belonging to the *japonica* and *heteracantha* complex. The second part, presented here, includes 9 species previously known from the area and 6 new species.

The types of the new species and other material are deposited in the collections of the Muséum national d'Histoire naturelle de Paris (MNHN). Duplicates are deposited in the Pusat Penelitian dan Pengembangan Oseanologi LIPI in Djakarta and in the National Museum of Natural History in Washington (NMNH).

Measurements given are of carapace length, excluding rostrum. The terminology used mainly follows ZARIQUIEY ALVAREZ (1952) and MACPHERSON & DE SAINT-LAURENT (1991). The term "overreaching" is used in the sense of reaching beyond the end of the extremity of the quoted segment of appendage.

LIST OF STATIONS

MUSORSTOM 1. Philippines.

- Station 5. — 19.03.1976, 14°01.5'N, 120°23.5'E, 200-215 m : *M. analoga*.
 Station 6. — 19.03.1976, 14°01.2'N, 120°20.0'E, 182-200 m : *M. analoga*, *M. armata*.
 Station 7. — 19.03.1976, 14°01.0'N, 120°20.0'E, 185-200 m : *M. analoga*.
 Station 10. — 19.03.1976, 13°59.8'N, 120°18.2'E, 187-205 m : *M. analoga*, *M. kuboi*.
 Station 11. — 20.03.1976, 13°59.8'N, 120°23.7'E, 217-230 m : *M. analoga*.
 Station 12. — 20.03.1976, 14°00.8'N, 120°20.5'E, 187-210 m : *M. analoga*.
 Station 18. — 21.03.1976, 13°56.3'N, 120°16.2'E, 150-159 m : *M. kuboi*.
 Station 20. — 21.03.1976, 13°59.2'N, 120°20.3'E, 208-222 m : *M. analoga*.
 Station 21. — 21.03.1976, 14°01.0'N, 120°22.8'E, 174-223 m : *M. analoga*.
 Station 24. — 22.03.1976, 14°00.0'N, 120°18.0'E, 189-209 m : *M. analoga*, *M. kuboi*.
 Station 25. — 22.03.1976, 14°02.7'N, 120°20.3'E, 191-200 m : *M. analoga*, *M. armata*, *M. kuboi*.
 Station 26. — 22.03.1976, 14°00.9'N, 120°16.8'E, 189 m : *M. analoga*.
 Station 30. — 22.03.1976, 14°01.3'N, 120°18.7'E, 177-186 m : *M. analoga*, *M. kuboi*.
 Station 31. — 22.03.1976, 14°00.0'N, 120°16.0'E, 187-195 m : *M. armata*.
 Station 34. — 23.03.1976, 14°01.0'N, 120°15.8'E, 188-191 m : *M. kuboi*.
 Station 36. — 23.03.1976, 14°01.2'N, 120°20.2'E, 187-210 m : *M. analoga*.
 Station 40. — 24.03.1976, 13°57.4'N, 120°27.8'E, 265-287 m : *M. analoga*, *M. kuboi*.
 Station 41. — 24.03.1976, 13°58.1'N, 120°31.4'E, 208-236 m : *M. kuboi*.
 Station 42. — 24.03.1976, 13°55.1'N, 120°28.6'E, 379-407 m : *M. analoga*, *M. compressa*.
 Station 43. — 24.03.1976, 13°50.5'N, 120°28.0'E, 448-484 m : *M. compressa*, *M. curvirostris*.
 Station 49. — 25.03.1976, 13°49.1'N, 119°59.8'E, 750-925 m : *M. fortiantennata*.
 Station 50. — 25.03.1976, 13°49.2'N, 120°01.8'E, 415-510 m : *M. analoga*, *M. curvirostris*.
 Station 51. — 25.03.1976, 13°49.4'N, 120°04.2'E, 170-200 m : *M. analoga*.
 Station 56. — 26.03.1976, 13°53.1'N, 120°08.9'E, 129-134 m : *M. gili*.
 Station 61. — 27.03.1976, 14°02.2'N, 120°18.1'E, 184-202 m : *M. analoga*.
 Station 65. — 27.03.1976, 14°00.0'N, 120°19.2'E, 194-202 m : *M. analoga*.
 Station 72. — 28.03.1976, 14°11.8'N, 120°28.7'E, 122-127 m : *M. gili*.

MUSORSTOM 2. **Philippines.**

- Station 1. — 20.11.1980, 14°00.3'N, 120°19.3'E, 188-198 m : *M. analoga*, *M. kuboi*.
 Station 10. — 21.11.1980, 14°00.1'N, 120°18.5'E, 188-195 m : *M. analoga*, *M. kuboi*.
 Station 11. — 21.11.1980, 14°00.4'N, 120°19.7'E, 194-196 m : *M. analoga*, *M. kuboi*.
 Station 12. — 21.11.1980, 14°01.0'N, 120°19.7'E, 197-210 m : *M. analoga*.
 Station 13. — 21.11.1980, 14°00.5'N, 120°20.7'E, 193-200 m : *M. analoga*, *M. kuboi*.
 Station 15. — 21.11.1980, 13°55.1'N, 120°28.4'E, 326-330 m : *M. compressa*.
 Station 20. — 22.11.1980, 14°00.9'N, 120°18.1'E, 185-192 m : *M. analoga*.
 Station 21. — 22.11.1980, 14°00.2'N, 120°17.8'E, 191-192 m : *M. analoga*.
 Station 26. — 23.11.1980, 13°49.6'N, 120°51.0'E, 299-320 m : *M. analoga*.
 Station 36. — 24.11.1980, 13°31.4'N, 121°23.9'E, 569-595 m : *M. curvirostris*, *M. longispinata*, *M. variabilis*.
 Station 38. — 25.11.1980, 12°53.5'N, 122°26.6'E, 1650-1660 m : *M. major*.
 Station 39. — 25.11.1980, 13°02.8'N, 122°37.1'E, 1030-1190 m : *M. curvirostris*.
 Station 40. — 25.11.1980, 13°07.7'N, 122°39.1'E, 280-440 m : *M. analoga*, *M. curvirostris*.
 Station 44. — 26.11.1980, 13°23.2'N, 122°20.7'E, 760-820 m : *M. curvirostris*, *M. variabilis*.
 Station 46. — 26.11.1980, 13°25.7'N, 122°17.0'E, 445-520 m : *M. curvirostris*, *M. longispinata*, *M. variabilis*.
 Station 49. — 26.11.1980, 13°38.4'N, 121°44.1'E, 416-425 m : *M. curvirostris*, *M. longispinata*.
 Station 55. — 27.11.1980, 13°53.7'N, 119°58.5'E, 865-866 m : *M. curvirostris*, *M. fortiantennata*.
 Station 63. — 29.11.1980, 14°07.3'N, 120°15.0'E, 215-230 m : *M. analoga*, *M. kuboi*.
 Station 64. — 29.11.1980, 14°01.5'N, 120°18.9'E, 191-195 m : *M. analoga*.
 Station 66. — 29.11.1980, 14°00.6'N, 120°20.3'E, 192-209 m : *M. analoga*, *M. armata*.
 Station 75. — 01.12.1980, 13°50.5'N, 120°30.3'E, 300-330 m : *M. analoga*, *M. compressa*, *M. curvirostris*,
M. kuboi, *M. sacksi*.
 Station 80. — 01.12.1980, 13°45.1'N, 120°37.7'E, 178-205 m : *M. kuboi*.
 Station 83. — 02.12.1980, 13°55.2'N, 120°30.5'E, 318-320 m : *M. analoga*, *M. compressa*, *M. kuboi*,
M. pilorhyncha.

MUSORSTOM 3. **Philippines.**

- Station 87. — 31.05.1985, 14°00.6'N, 120°19.6'E, 191-197 m : *M. analoga*, *M. kuboi*.
 Station 92. — 31.05.1985, 14°03.0'N, 120°11.5'E, 224 m : *M. analoga*, *M. compressa*.
 Station 98. — 01.06.1985, 14°00.2'N, 120°17.9'E, 194-205 m : *M. analoga*.
 Station 99. — 01.06.1985, 14°01.0'N, 120°19.5'E, 196-204 m : *M. analoga*, *M. kuboi*.
 Station 101. — 01.06.1985, 14°00.15'N, 120°19.25'E, 194-196 m : *M. analoga*, *M. armata*, *M. kuboi*,
M. variabilis.
 Station 103. — 01.06.1985, 14°00.4'N, 120°18.15'E, 193-200 m : *M. analoga*, *M. kuboi*.
 Station 105. — 01.06.1985, 13°52.6'N, 120°29.6'E, 398-417 m : *M. compressa*.
 Station 106. — 02.06.1985, 13°47.0'N, 120°30.3'E, 640-668 m : *M. compressa*.
 Station 117. — 03.06.1985, 12°31.2'N, 120°39.3'E, 92-97 m : *M. minuta*, *M. pusiola*.
 Station 118. — 03.06.1985, 11°58.6'N, 121°05.5'E, 448-466 m : *M. prominula*.
 Station 119. — 03.06.1985, 11°59.7'N, 121°12.7'E, 320-337 m : *M. analoga*, *M. compressa*, *M. curvirostris*,
M. prominula.
 Station 120. — 03.06.1985, 12°05.6'N, 121°15.6'E, 219-220 m : *M. analoga*, *M. kuboi*.
 Station 121. — 03.06.1985, 12°08.3'N, 121°17.3'E, 73-84 m : *M. parvula*.
 Station 122. — 04.06.1985, 12°20.0'N, 121°41.6'E, 673-675 m : *M. curvirostris*, *M. longispinata*.
 Station 123. — 04.06.1985, 12°10.6'N, 121°45'E, 700-702 m : *M. longispinata*, *M. variabilis*.
 Station 125. — 04.06.1985, 11°57.7'N, 121°28.5'E, 388-404 m : *M. analoga*, *M. curvirostris*.
 Station 127. — 04.06.1985, 11°47.7'N, 121°28.8'E, 464-475 m : *M. longispinata*.
 Station 128. — 05.06.1985, 11°49.7'N, 121°41.2'E, 815-821 m : *M. curvirostris*.
 Station 133. — 05.06.1985, 11°57.8'N, 121°52.25'E, 334-390 m : *M. analoga*, *M. curvirostris*.
 Station 135. — 05.06.1985, 11°58.6'N, 122°01.8'E, 486-551 m : *M. curvirostris*, *M. longispinata*.

- Station 138. — 06.06.1985, 11°53.8'N, 122°15'E, 252-370 m : *M. longispinata*.
 Station 139. — 06.06.1985, 11°52.9'N, 122°14.7'E, 240-267 m : *M. analoga*.
 Station 145. — 07.06.1985, 11°01.6'N, 124°04.2'E, 214-246 m : *M. longispinata*.

CORINDON, Indonesia.

- Station 209. — 31.10.1980, 00°07.3'S, 117°53.8'E, 490 m : *M. curvirostris*.
 Station 228. — 03.11.1980, 00°01.5'S, 119°35.0'E, 300 m : *M. analoga*.
 Station 240. — 05.11.1980, 00°37.6'S, 119°33.5'E, 675 m : *M. curvirostris*.
 Station 268. — 06.11.1980, 01°57.0'S, 119°16.0'E, 200 m : *M. spinulifera*.
 Station 271. — 07.11.1980, 01°57.8'S, 119°15.0'E, 215 m : *M. kuboi*.
 Station 276. — 08.11.1980, 01°54.6'S, 119°13.8'E, 456-395 m : *M. curvirostris*, *M. prominula*.

SYSTEMATIC ACCOUNT

Munida analoga sp. nov.

Fig. 1 a-g

Munida squamosa - BABA, 1988 : 83 (key), 133 (not *Munida squamosa* Henderson, 1885).

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 1 : stn 5, 200-215 m : 4 ♀ 9.8-13.3 mm (MNHN-Ga 2401). — Stn 6, 182-200 m : 4 ♂ 11.3-19.6 mm; 3 ov. ♀ 14.7-17.2 mm; 2 ♀ 14.0, 14.5 mm (MNHN-Ga 2402). — Stn 7, 185-200 m : 3 ♂ 12.8-19.0 mm; 1 ov. ♀ 18.1 mm; 1 ♀ 15.4 mm (MNHN-Ga 2403). — Stn 10, 187-205 m : 1 ♂ 18.0 mm; 1 ov. ♀ 17.5 mm (MNHN-Ga 2404). — Stn 11, 217-230 m : 15 ♂ 11.2-20.5 mm; 1 ov. ♀ 15.7 mm; 7 ♀ 10.0-16.9 mm (MNHN-Ga 2405). — Stn 12, 187-210 m : 2 ♂ 19.3, 19.8 mm; 1 ov. ♀ 17.5 mm; 1 ♀ 19.0 mm (MNHN-Ga 2406). — Stn 20, 208-222 m : 3 ♂ 14.1-19.6 mm; 1 ov. ♀ 14.1 mm; 3 ♀ 13.5-15.4 mm (MNHN-Ga 2407). — Stn 21, 174-223 m : 2 ♂ 7.0, 9.3 mm (MNHN-Ga 2408). — Stn 24, 189-209 m : 4 ov. ♀ 12.8-16.5 mm; 2 ♀ 12.8, 17.6 mm (MNHN-Ga 2408). — Stn 25, 191-200 m : 4 ♂ 17.8-19.2 mm; 1 ov. ♀ 19.8 mm; 1 ♀ 11.9 mm (MNHN-Ga 2409). — Stn 26, 189 m : 1 ♂ 8.5 mm (MNHN-Ga 2410). — Stn 30, 177-186 m : 1 ov. ♀, 16.4 mm (MNHN-Ga 2411). — Stn 36, 187-210 m : 19 ♂ 14.0-20.5 mm; 10 ov. ♀ 14.3-17.8 mm; 6 ♀ 12.3-16.3 mm (MNHN-Ga 2412). — Stn 40, 265-287 m : 3 ♂ 6.3-20.9 mm; 4 ♀ 9.4-12.0 mm; 1 juv. 4.9 mm (MNHN-Ga 2413). — Stn 42, 379-407 m : 1 ♂ 13.0 mm; 1 ♀ 13.0 mm (MNHN-Ga 2414). — Stn 50, 415-510 m : 1 ♀ 15.7 mm; 1 juv. 3.6 mm (MNHN-Ga 2415). — Stn 51, 170-200 m : 24 ♂ 11.1-18.0 mm; 5 ov. ♀ 12.2-15.8 mm; 8 ♀ 10.6-14.1 mm (MNHN-Ga 2416). — Stn 61, 184-202 m : 2 ♂ 16.2, 17.3 mm (MNHN-Ga 2417). — Stn 65, 194-202 m : 2 ♂ 18.0, 19.7 mm (MNHN-Ga 2418).

MUSORSTOM 2 : stn 1, 188-198 m : 1 ♂ 19.0 mm (MNHN-Ga 2419). — Stn 10, 188-195 m : 1 ♂ 15.8 mm (MNHN-Ga 2420). — Stn 11, 194-196 m : 10 ♂ 15.3-21.0 mm; 3 ov. ♀ 17.4-19.2 mm (MNHN-Ga 2421). — Stn 12, 197-210 m : 12 ♂ 17.4-22.0 mm; 14 ov. ♀ 17.4-21.8 mm; 1 ♀ 16.0 mm (MNHN-Ga 2422). — Stn 13, 193-200 m : 6 ♂ 18.7-20.5 mm; 6 ov. ♀ 18.1-22.0 mm (MNHN-Ga 2423). — Stn 20, 185-192 m : 1 ♂ 19.8 mm; 1 ov. ♀ 20.3 mm (MNHN-Ga 2424). — Stn 21, 191-192 m : 1 ♂ 20.3 mm; 1 ov. ♀ 19.4 mm (MNHN-Ga 2425). — Stn 26, 299-320 m : 7 ♂ 9.7-17.6 mm; 5 ♀ 9.7-15.8 mm (MNHN-Ga 2426). — Stn 40, 280-440 m : 1 ♂ 22.9 mm (MNHN-Ga 2427). — Stn 63, 215-230 m : 1 ov. ♀ 16.2 mm (MNHN-Ga 2428). — Stn 64, 191-195 m : 1 ♂ 20.4 mm; 1 ov. ♀ 19.5 mm (MNHN-Ga 2429). — Stn 66, 192-209 m : 20 ♂ 15.1-20.8 mm; 24 ov. ♀ 13.4-19.1 mm; 2 ♀ 15.7, 18.7 mm (MNHN-Ga 2430). — Stn 75, 300-330 m : 2 ♀ 6.4, 8.0 mm (MNHN-Ga 2431). — Stn 83, 318-320 m : 12 ♂ 6.7-16.3 mm; 7 ♀ 5.8-11.9 mm (MNHN-Ga 2432).

MUSORSTOM 3 : stn 87, 191-197 m : 1 ov. ♀ 17.5 mm (MNHN-Ga 2433). — Stn 92, 224 m : 1 ♂ 14.2 mm; 7 ♀ 5.7-13.6 mm (MNHN-Ga 2434). — Stn 98, 194-205 m : 2 ov. ♀ 13.6, 16.4 mm; 1 ♀ 19.5 mm (MNHN-Ga 2435). — Stn 99, 196-204 m : 4 ♂ 15.7-20.5 mm; 4 ov. ♀ 15.8-19.7 mm; 1 ♀ 17.7 mm (MNHN-Ga 2436). — Stn 101, 194-196 m : 2 ♂ 17.7, 18.0 mm; 3 ov. ♀ 16.7-17.2 mm (MNHN-Ga 2437). — Stn 103, 193-200 m : 4 ♂ 18.2-19.4 mm; 3 ov. ♀ 18.9-19.0 mm (MNHN-Ga 2438). — Stn 119, 320-337 m : 3 ♂ 12.0-18.3 mm; 2 ♀ 12.4, 14.7 mm (MNHN-Ga 2439). — Stn 120, 219-220 m : 9 ♂ 14.8-19.6 mm; 5 ov. ♀ 17.1-18.3 mm; 1 ♀ 18.6 mm (MNHN-Ga 2440, 2441). — Stn 125, 388-404 m : 10 ♂ 7.6-18.2 mm; 4 ov. ♀ 15.2-19.4 mm; 2 ♀ 9.3, 16.4 mm (MNHN-Ga 2442). — Stn 133, 334-390 m : 2 ♂ 7.4, 10.4 mm; 1 ov. ♀ 14.5 mm; 2 ♀ 7.4, 10.4 mm (MNHN-Ga 2443). — Stn 139, 240-267 m : 2 ♂ 13.0, 14.7 mm; 2 ov. ♀ 15.0, 17.2 mm; 1 ♀ 11.3 mm (MNHN-Ga 2445).

Indonesia. CORINDON 2 : stn 228, 300 m : 1 ♀ 8.2 mm (MNHN-Ga 2446). — Stn 271, 215 m : 19 ♂ 9.8-20.3 mm; 1 ov. ♀ 17.2 mm; 14 ♀ 6.8-17.3 mm (MNHN-Ga 2447).

TYPES. — The male from MUSORSTOM 3, Stn 120, 19.0 mm (MNHN-Ga 2441) has been selected as holotype; the other specimens are paratypes.

ETYMOLOGY. — From the Greek, *analogos*, resembling, in reference to its similarity to *M. squamosa* Henderson, 1885, and *M. similis* Baba, 1988.

DESCRIPTION (Holotype). — Carapace, excluding rostrum, as long as wide, with numerous transverse striae minutely granulate. Secondary striae between principal striae. Gastric region feebly convex with 2 epigastric spines behind supraoculars. Moderate-sized postcervical spine on each side. Cardiac region distinctly circumscribed. Posterior transverse ridge with 2 spines.

Frontal margins transverse. Lateral margins convex. Anterolateral spine well developed, overreaching level of sinus between rostrum and supraocular spine. Second small lateral spine in front of cervical groove. Branchial margins with 4 small spines of similar size.

Rostrum spiniform, slender, as stout as supraocular spines, upwardly directed, slightly less than half as long as remaining carapace. Supraocular spines widely separated from rostrum, slightly divergent, overreaching corneae.

Thoracic sternites with numerous arcuate striae.

Second and third abdominal segments dorsally squamate, each with 2 elevated transverse ridges, anterior ridge with 4 spines, median 2 well developed; fourth segment with 2 spines on anterior ridge, strong median spine on posterior ridge.

Gonopods absent from first abdominal segment.

Eyes moderately large, maximum corneal diameter one-third length of anterior border of carapace between bases of anterolateral spines.

Basal segment of antennule (distal spines excluded) reaching beyond end of corneae, with 2 distal (distolateral clearly longer than distomesial) and 2 lateral spines.

First segment of antennal peduncle with moderate-sized distomesial process, reaching distal border of second segment. Second segment with distomesial angle unarmed, distolateral angle with small spine; third segment with distomesial well developed spine.

Merus of third maxilliped with median spine on flexor border; extensor margin with distal spine.

Chelipeds squamate, subequal, 6 times carapace length; merus with 3 rows of spines; carpus with 2 spines on mesial and ventral sides, several spines on distal margin; palm cylindrical, with spines scattered in rows on mesial and ventral margins; fixed finger bifid distally.

Walking legs slender, depressed. First walking leg 3.5 times carapace length; merus with 12 spines on dorsal margin and 5 spines on ventral border; carpus with long distal spine on dorsal and ventral borders; propodus with 4 movable spines on ventral border; dactylus one-half propodus length, with dorsal border finely denticulate, concave proximally, ventral border with 33-35 movable spinules situated on proximal half, distal half unarmed. Spinulation of second and third walking legs similar to first. Third walking leg shorter than first and second, with merus about 3/4 that of first walking leg.

Epipods absent from pereopods.

VARIATIONS. — No significant variation in the main characters have been observed between specimens examined. Spines of antennal peduncle remain constant in all specimens examined.

REMARKS. — *M. analoga* is very close to *M. squamosa* Henderson, 1885, from Admiralty Islands and New Caledonia. In particular, both species have one median spine on the cardiac region, one spine on the posterior ridge of the fourth abdominal segment and the first segment of the antennal peduncle with a moderated size process. A comparison with the type material and numerous specimens of *M. squamosa* from New Caledonia showed that they can be easily distinguished by the following characters (Fig. 1 h-i) :

— The cardiac spine is more prominent in *M. squamosa* than in *M. analoga*.

— The second segment of antennal peduncle has a distinct mesiodistal spine in *M. squamosa*, none in *M. analoga*.

— The dactylus of the walking legs is longer and more slender in *M. analoga* than in *M. squamosa*.

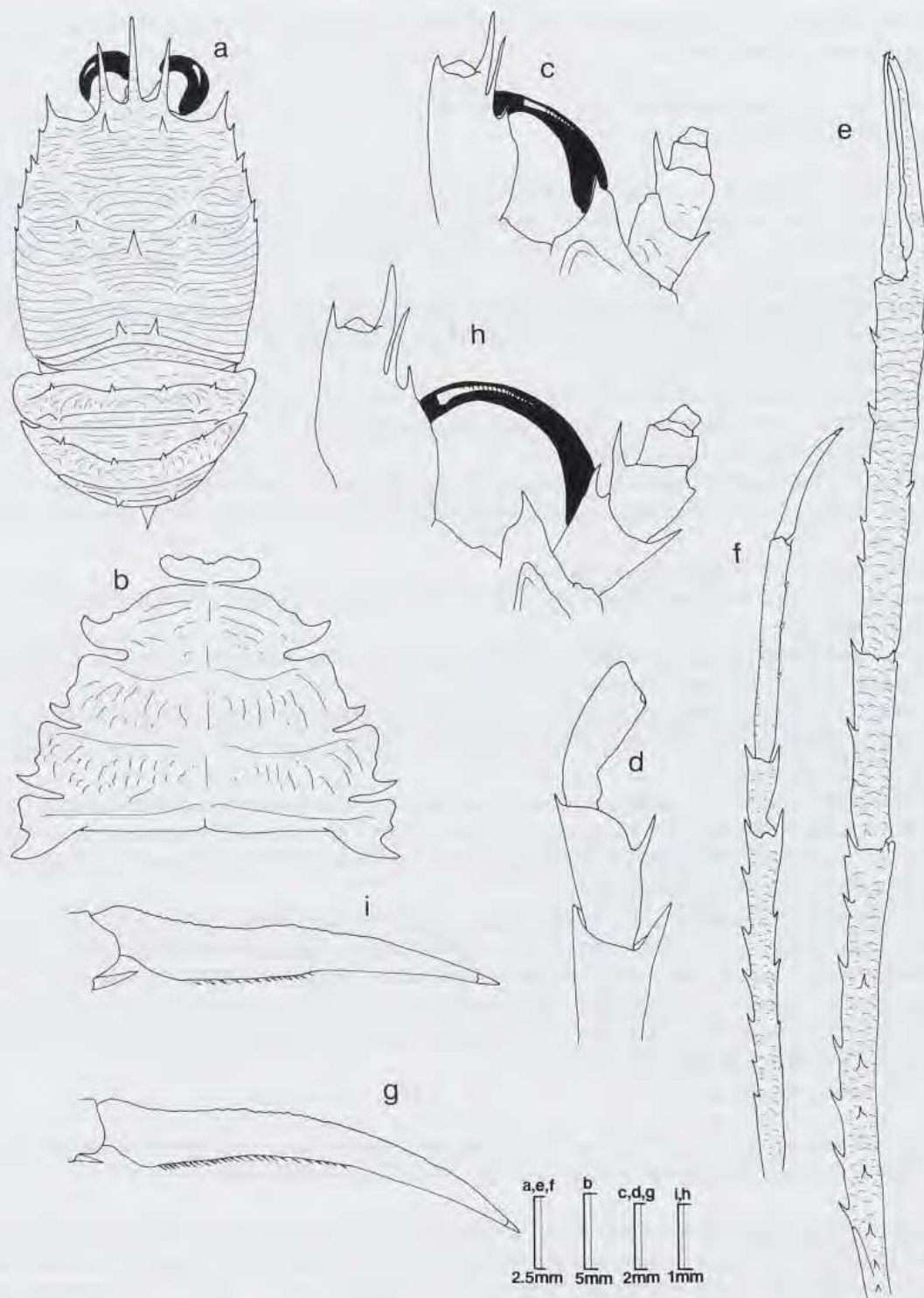


FIG. 1 a-g. — *Munida analoga* sp. nov., ♂, 19.0 mm, holotype from Stn 120 (MUSORSTOM 3): a, carapace, dorsal view; b, sternal plastron; c, ventral view of cephalic region, showing antennula and antennal peduncles; d, right third maxilliped, lateral view; e, right cheliped, dorsal view; f, right first walking leg, lateral view; g, dactylus of right first walking leg, lateral view.

FIG. 1 h-i. — *Munida squamosa* Henderson, 1885, ov. ♀, 10.8 mm, type, from Stn 219 ("Challenger"): h, ventral view of cephalic region, showing antennula and antennal peduncles; i, dactylus of right first walking leg, lateral view.

ALCOCK (1894, 1901) and ALCOCK and ANDERSON (1895) cited *M. squamosa* var. *prolixa* in Andaman and Arabian Seas. The examination of two specimens from the "Investigator" collected in the Indian ocean (USNM 42708, 1 M 15.5 mm, 1 ov. V 14.3 mm, 06°50'20"N, 29°36'20"E, 336-401 m) shows that this variety also presents a distal spine (less acute than in the types of *M. squamosa* and absent in *M. analoga*) on the mesial border of the second antennal segment and the branchial margins have 3 spines of similar size (4 spines in *M. squamosa* and *M. analoga*). These characters suggest that *M. squamosa* var. *prolixa* is closer to *M. squamosa* than to the new species. However, although this variety may belong to a different species, additional material would be desirable to confirm its identity.

M. analoga is also close to *M. similis* Baba, 1988, from the Philippines (BABA, 1988). They differ in the following characters :

— In *M. similis* the rostrum is more slender than the supraocular spines, while they are about the same size in *M. analoga*.

— The lateral border of the basal antennular segment has one spine in *M. similis*, two in *M. analoga*.

— The distomesial margin of the basal antennal segment is bluntly produced in *M. similis*, ending in a sharp spine in *M. analoga*; on the other hand, the third antennal segment has a well developed distomesial spine in *M. analoga*, none in *M. similis*.

SIZE. — The males examined ranged between 6.3 and 22.9 mm, females between 5.7 and 19.8 mm; ovigerous females from 12.2 mm.

DISTRIBUTION. — Philippines, Indonesia, north of Sulawesi, between 170 and 510 m.

Munida armata Baba, 1988

Munida armata Baba, 1988 : 84 (key), 86, fig. 31.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 1 : stn 6, 182-200 m : 1 ♂ 17.9 mm (MNHN-Ga 3394). — Stn 25, 191-200 m : 1 ov. ♀ 10.9 mm (MNHN-Ga 3395). — Stn 31, 187-195 m : 3 ♂ 9.0-14.6 mm; 2 ♀ 9.0, 10.2 mm (MNHN-Ga 2444).

MUSORSTOM 2 : stn 66, 192-209 m : 1 ov. ♀ 14.6 mm (MNHN-Ga 3396).

MUSORSTOM 3 : stn 101, 194-196 m : 1 ♂ 11.7 mm (MNHN-Ga 3397).

REMARKS. — The specimens examined agree with the original description and illustrations provided by BABA (1988). The lateral parts of the seventh thoracic sternite have numerous coarse granules.

SIZE. — The males examined ranged between 9.0 and 17.9 mm, females between 9.0 and 14.6 mm; ovigerous females from 10.9 mm.

DISTRIBUTION. — South China Sea off southwestern Luzon, between 183 and 216 m (BABA, 1988). The specimens from MUSORSTOM cruises were collected in the same areas, between 182 and 209 m.

Munida compressa Baba, 1988

Munida compressa Baba, 1988 : 84 (key), 91, figs 33-34.

MATERIAL EXAMINED — **Philippines.** MUSORSTOM 1 : stn 42, 379-407 m : 2 ♂ 9.9, 14.8 mm; 1 ov. ♀ 12.8 mm; 1 ♀ 11.4 mm (MNHN-Ga 2467). — Stn 43, 448-484 m : 1 ov. ♀ 12.6 mm (MNHN-Ga 2468).

MUSORSTOM 2 : stn 15, 326-330 m : 7 ♂ 7.8-10.3 mm; 3 ov. ♀ 9.6-11.8 mm; 3 ♀ 5.3-9.0 mm (MNHN-Ga 2469). — Stn 75, 300-330 m : 6 ♂ 8.3-12.4 mm; 6 ov. ♀ 9.5-11.8 mm; 1 ♀ 4.6 mm (MNHN-Ga 2470). — Stn 83, 318-320 m : 5 ♂ 8.5-11.9 mm; 10 ov. ♀ 10.5-13.0 mm; 6 ♀ 6.0-10.0 mm (MNHN-Ga 2471).

MUSORSTOM 3 : stn 92, 224 m : 1 ♂ 5.7 mm; 1 ♀ 7.0 mm (MNHN-Ga 2472). — Stn 105, 398-417 m : 7 ♂ 10.2-15.1 mm; 2 ♀ 9.5, 11.2 mm (MNHN-Ga 2473). — Stn 106, 640-668 m : 1 ♂ 9.8 mm (MNHN-Ga 2474). — Stn 119, 320-337 m : 2 ♂ 11.8, 12.6 mm (MNHN-Ga 2475).

REMARKS. — The specimens examined agree with the original description and illustrations provided by BABA (1988). The lateral parts of the seventh thoracic sternite have no granules or ridges.

SIZE. — The males examined ranged between 5.7 and 15.1 mm, females between 4.6 and 13.0 mm; ovigerous females from 9.5 mm.

DISTRIBUTION. — Philippines, south China Sea, Japan, between 180 and 545 m (BABA, 1988). The present material was collected southwest of Luzon and south of Mindoro, between 224 and 668 m.

Munida curvirostris Henderson, 1885

Munida curvirostris Henderson, 1885 : 412.

Munida militaris var. *curvirostris* - HENDERSON, 1888 : 139, pl. 3, figs 7a, 7b.

Munida militaris var. *andamanica* Alcock, 1894 : 321. — ALCOCK & ANDERSON, 1895, pl. 13, fig. 2.

Munida andamanica - BABA, 1988 : 85.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 1 : stn 43, 448-484 m : 1 ov. ♀ 10.1 mm; 1 ♀ 10.1 mm (MNHN-Ga 3398). — Stn 50, 415-510 m : 2 ♂ 7.7, 13.7 mm; 2 ov. ♀ 10.2, 14.7 mm; 1 ♀ 14.0 mm (MNHN-Ga 2448).

MUSORSTOM 2 : stn 36, 569-595 m : 2 ♂ 13.7, 16.0 mm; 1 ov. ♀ 17.0 mm; 2 ♀ 10.0, 11.3 mm (MNHN-Ga 2449). — Stn 39, 1030-1190 m : 2 ♂ 12.5, 13.2 mm; 3 ov. ♀ 13.8, 18.6 mm; 5 ♀ 6.1-16.7 mm (MNHN-Ga 2450). — Stn 40, 280-440 m : 1 ♂ 15.0 mm (MNHN-Ga 2451). — Stn 44, 760-820 m : 1 ov. ♀ 12.0 mm (MNHN-Ga 2452). — Stn 46, 445-520 m : 5 ♂ 7.1-15.5 mm (MNHN-Ga 2453). — Stn 49, 416-425 m : 6 ♂ 11.0-17.8 mm; 1 ov. ♀ 20.3 mm; 5 ♀ 11.3-15.0 mm (MNHN-Ga 2454). — Stn 55, 865 m : 1 ♀ 10.6 mm (MNHN-Ga 2455). — Stn 75, 300-330 m : 1 ♂ 16.2 mm; 1 ♀ 13.5 mm (MNHN-Ga 2456).

MUSORSTOM 3 : stn 119, 320-337 m : 2 ♀ 12.5, 15.7 mm (MNHN-Ga 2457). — Stn 122, 673-675 m : 8 ♂ 9.4-18.9 mm; 3 ♀ 9.4-14.0 mm (MNHN-Ga 2458). — Stn 123, 700-702 m : 5 ♂ 10.5-18.2 mm; 5 ♀ 9.5-17.0 mm (MNHN-Ga 2459). — Stn 125, 388-404 m : 1 ♂ 16.0 mm; 3 ♀ 9.5-14.6 mm (MNHN-Ga 2460). — Stn 128, 815-820 m : 2 ♂ 16.7, 17.8 mm; 5 ♀ 10.2-20.8 mm (MNHN-Ga 2461). — Stn 133, 334-390 m : 1 ♂ 12.9 mm; 1 ♀ 9.0 mm (MNHN-Ga 2462). — Stn 135, 486-551 m : 3 ♂ 7.9-11.2 mm; 1 ♀ 9.5 mm (MNHN-Ga 2463).

Indonesia. CORINDON 2 : stn 209, 490 m : 3 ♂ 15.5, 16.4 mm; 9 ♀ 10.6-16.8 mm (MNHN-Ga 2464). — Stn 240, 675 m : 4 ♂ 11.4-12.0 mm; 3 ov. ♀ 14.3-14.6 mm; 4 ♀ 11.2-15.3 mm (MNHN-Ga 2465). — Stn 276, 395-450 m : 2 ♂ 8.2, 13.0 mm; 6 ♀ 8.8-16.0 mm (MNHN-Ga 2466).

REMARKS. — BABA (personnal communication) believes that *M. curvirostris* Henderson, 1885, and *M. andamanica* Alcock, 1894, are synonymous (see also BABA & MACPHERSON, 1991). A complete revision of this species will be given by this author. The species is characterized by the moderately short cheliped, with strong spines on the distal part of the merus. The lateral parts of the seventh thoracic sternite have no granules or ridges.

SIZE. — The males examined ranged between 7.1 and 18.9 mm; females between 6.1 and 20.8 mm; ovigerous females from 10.1 mm.

DISTRIBUTION. — BABA (1988) reported this species from the east coast of Africa, Arabian Sea, Maldives, Andaman Sea, Indonesia (north of Sulawesi), the Philippines and south of Japan, between 141 and 1360 m. The present material was collected from south and southwest of Luzon, south of Mindoro, north of Panay and north of Sulawesi, between 280 and 1190 m.

Munida fortiantennata Baba, 1988

Munida fortiantennata Baba, 1988 : 82 (key), 101, fig. 37.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 1 : stn 49, 750-925 m : 1 ♂ 14.7 mm (MNHN-Ga 2476).

MUSORSTOM 2 : stn 55, 865 m : 1 ♂ 16.2 mm; 3 ov. ♀ 13.2 to 17.0 mm (MNHN-Ga 2477).

REMARKS. — The number of spines on the posterior border of the carapace ranged between 2 and 5 (4 in the holotype) and the males have only one pair of gonopods. BABA (1988) described this species from an unique specimen caught in the Molucca Sea, 763 m. The present specimens were taken from southwest of Luzon, between 750 and 925 m.

Munida gilii sp. nov.

Fig. 2

Munida babai - BABA, 1988 : 82 (key), 89, fig. 32 (not *Munida babai* Tirmizi & Javed, 1976).

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 1 : stn 56, 129-134 m : 5 ♂ 4.3-5.9 mm; 3 ov. ♀ 5.3-5.4 mm; 1 ♀ 5.1 mm (MNHN-Ga 2478, 2479). — Stn 72, 122-127 m : 1 ♂ 4.5 mm; 2 ov. ♀ 4.6, 5.3 mm (MNHN-Ga 2480).

TYPES. — The male of 5.9 mm from MUSORSTOM 1, Stn 56 (MNHN-Ga 2479) has been selected as holotype; the other specimens are paratypes.

ETYMOLOGY. — This species is dedicated to J.M. GILI from the Instituto de Ciencias del Mar, for his important contribution to the systematic of marine invertebrates and support in my studies.

DESCRIPTION (Holotype). — Carapace, excluding rostrum, slightly longer than wide. Secondary striae present between main striae. Gastric region with row of 13 epigastric spines. One postcervical spine on each side.

Frontal margins slightly oblique. Anterolateral spine situated at anterolateral angle, not reaching level of sinus between rostrum and supraocular spine. Second marginal spine before cervical groove smaller than preceding one. Branchial margins with 5 small spines quite similar in size.

Rostrum spiniform, dorsally carinated, half as long as remaining carapace, slightly sinuous and downwardly directed distally. Supraocular spines short, clearly not reaching end of corneae, subparallel and upwardly directed.

Fourth to sixth thoracic sternites each with some arcuate striae.

Anterior ridge of second, third and fourth abdominal segments with 4, 2 and 1 pairs of spines, respectively. Second to fifth segments each with several transverse continuous striae.

First and second abdominal segments each with pair of gonopods.

Eyes large, maximum corneal diameter about one-half length of anterior border of carapace between bases of anterolateral spines.

Basal segment of antennule (distal spines excluded) overreaching corneae, with 2 distal spines; mesial one longer than lateral; 2 spines on lateral margin.

First segment of antennal peduncle with distomesial spine reaching end of second segment; second segment with 2 long distal spines, mesial longer than lateral and slightly overreaching antennal peduncle; third segment unarmed.

Merus of third maxilliped bearing 2 well developed spines on flexor margin, proximal longer than distal; extensor margin with distal spine.

Chelipeds squamate, right longer and stouter than left. Right cheliped about 5 times as long as carapace; merus and carpus with spines on mesial, dorsal and lateral borders; palm with several small spines on mesial and dorsal sides, and distal spine on lateral border; movable finger with one basal and one distal spine; fixed finger with one basal and 2 distal spines.

Walking legs slender. First walking leg 2.5 times carapace length; merus with row of 11-12 spines on dorsal border increasing in size distally, long distal spine and 2-5 projected striae on distal half of ventral margin; carpus with long distal spine on dorsal and ventral borders, 2-3 additional spines on dorsal margin; propodus with row of 14-16 movable spines on ventral margin; dactylus long, slightly shorter than propodus, with 7 movable spinules along proximal half of ventral margin. Second walking leg similar to first. Third walking leg shorter than first and second; merus about one-half that of first walking leg.

Epipods absent from all pereopods.

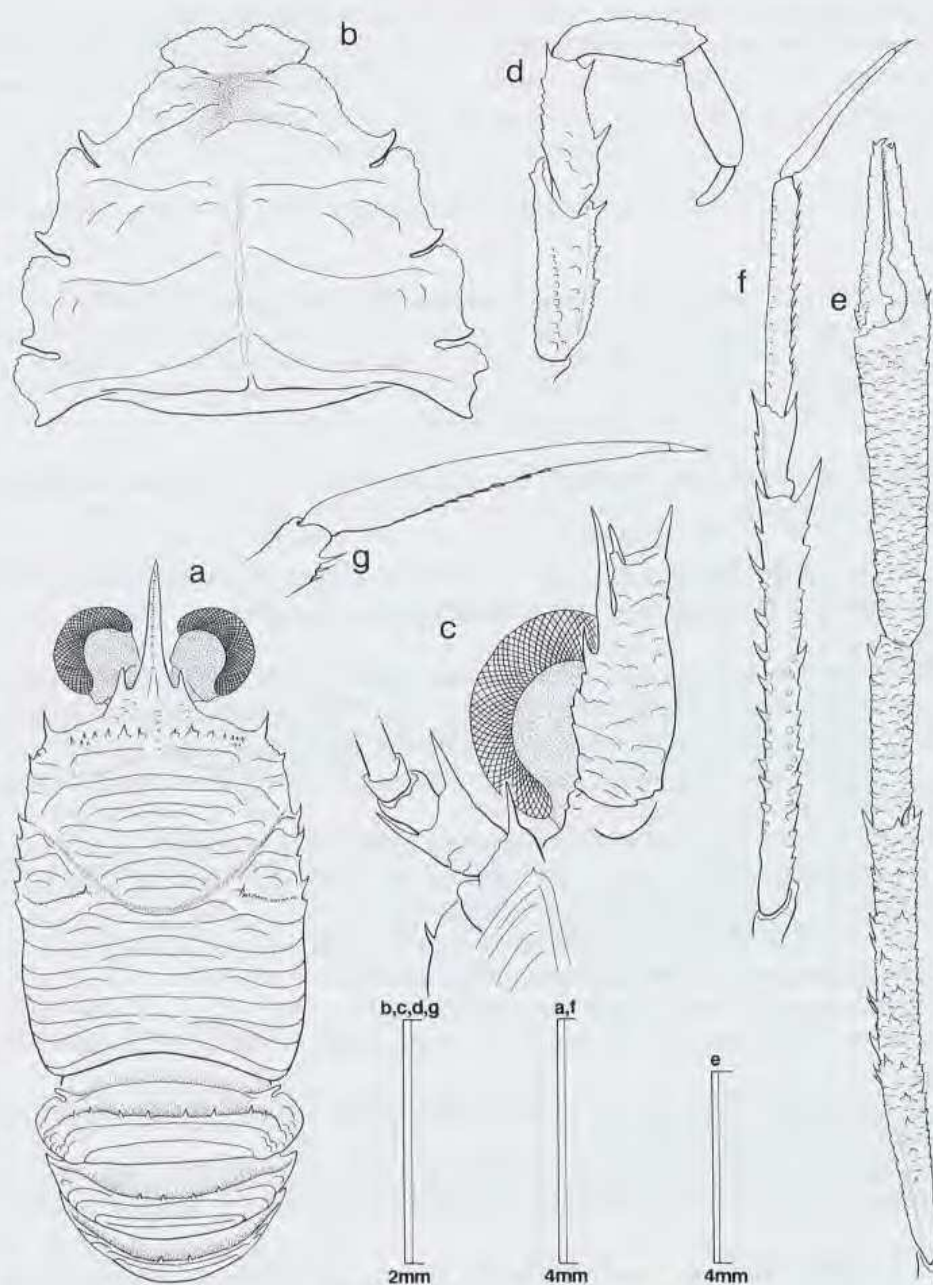


FIG. 2. — *Munida gilii* sp. nov., ♂, 5.9 mm, holotype from Stn 56 (MUSORSTOM 1): a, carapace, dorsal view; b, sternal plastron; c, ventral view of cephalic region, showing antennula and antennal peduncles; d, right third maxilliped, lateral view; e, right cheliped, dorsal view; f, right first walking leg, lateral view; g, dactylus of right first walking leg, lateral view.

VARIATIONS. — The number of spines on the anterior ridge of the second, third and fourth abdominal segments ranges between 8-13, 2-4 and 2-4, respectively (see also BABA, 1988). The fixed finger of the chelipeds always has 1-3 proximal spines. The other main characters remain constant.

REMARKS. — *Munida gilii* sp. nov. is very close to *M. babai* Tirmizi & Javed, 1976 from South Africa, off Natal (118-150 m) in having spines on the anterior ridge of the second, third and fourth abdominal segments. The

examination of the type specimens (1 ♂ 4.0 mm; 2 ♀ 2.0, 2.5 mm, National Museum of Natural History, Washington) and additional material from Madagascar (2 ♂ 3.4, 4.5 mm; 1 ♀ 4.0 mm, MNHN, see BABA, 1990) shows several constant differences between the two:

— The distomesial spine of the basal antennular segment is longer than the distolateral in *M. gillii*, being shorter in *M. babai*.

— The fixed finger of the chelipeds in *M. babai* is unarmed (except distal spines), instead of bearing 1-3 spines on the proximal half as in *M. gillii*.

SIZE. — The males examined ranged between 4.3 and 5.9 mm, females between 4.6 and 5.4 mm; ovigerous females from 4.6 mm.

DISTRIBUTION. — Hong Kong and Philippines, between Samar and Leyte, 112-113 m (BABA, 1988). The specimens collected during MUSORSTOM cruises were caught west of Luzon, between 122 and 134 m.

Munida kuboi Yanagita, 1943

Munida kuboi Yanagita, 1943 : 20, figs 5-6. — BABA, 1988 : 83 (key), 109, fig. 40; 1990 : 925 (key), 964.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 1 : stn 10, 187-205 m : 1 ♂ 10.6 mm; 1 ov. ♀ 12.4 mm (MNHN-Ga 2481). — Stn 18, 150-159 m : 1 ♀ 6.7 mm (MNHN-Ga 2482). — Stn 24, 189-209 m : 1 ♂ 10.9 mm (MNHN-Ga 2483). — Stn 25, 191-200 m : 1 ov. ♀ 7.4 mm (MNHN-Ga 2484). — Stn 30, 177-186 m : 1 ♂ 12.4 mm (MNHN-Ga 2485). — Stn 34, 188-191 m : 2 ♂ 10.6, 12.6 mm (MNHN-Ga 2486). — Stn 40, 265-287 m : 1 ♂ 10.4 mm (MNHN-Ga 2487). — Stn 41, 208-236 m : 1 ♂ 10.1 mm (MNHN-Ga 2488).

MUSORSTOM 2 : stn 1, 188-198 m : 1 ov. ♀ 11.7 mm (MNHN-Ga 2489). — Stn 10, 188-195 m : 2 ♂ 9.7, 11.7 mm; 1 ov. ♀ 10.4 mm (MNHN-Ga 2490). — Stn 11, 194-196 m : 2 ♂ 9.8, 12.8 mm (MNHN-Ga 2491). — Stn 13, 193-200 m : 1 ♂ 10.6 mm; 1 ♀ 7.0 mm (MNHN-Ga 2492). — Stn 63, 215-230 m : 1 ♂ 8.0 mm (MNHN-Ga 2493). — Stn 75, 300-330 m : 1 ♂ 11.4 mm (MNHN-Ga 2494). — Stn 80, 178-205 m : 1 ♂ 7.7 mm (MNHN-Ga 2495). — Stn 83, 318-320 m : 1 ♂ 13.5 mm (MNHN-Ga 2496).

MUSORSTOM 3 : stn 87, 191-197 m : 3 ♂ 8.5-10.1 mm; 1 ov. ♀ 11.5 mm (MNHN-Ga 2497). — Stn 99, 196-204 m : 6 ♂ 9.8-14.7 mm; 1 ov. ♀ 13.6; 1 ♀ 10.1 mm (MNHN-Ga 2498). — Stn 101, 194-196 m : 1 ♂ 9.2 mm; 3 ♀ 9.0-9.6 mm (MNHN-Ga 2499). — Stn 103, 193-200 m : 2 ♂ 9.3, 10.0 mm; 1 ♀ 9.7 mm (MNHN-Ga 2500). — Stn 120, 219-220 m : 1 ♂ 7.2 mm (MNHN-Ga 2501).

Indonesia. CORINDON 2 : stn 271, 215 m : 4 ♂ 9.2-12.0 mm ; 1 ♀ 9.3 mm (MNHN-Ga 2502).

REMARKS. — The specimens examined agree with the original description (YANAGITA, 1943) and comments made by BABA (1988). The lateral parts of the seventh thoracic sternites have no granules or ridges.

SIZE. — The males examined ranged between 4.9 and 14.7 mm, females between 5.1 and 13.6 mm; ovigerous females from 10.1 mm.

DISTRIBUTION. — The type locality of this species is Toyama Bay (Japan) between 78 and 148 m. It was subsequently reported from the Philippines and Madagascar between 216 and 405 m (BABA, 1988; 1990). The present material was collected from southwest of Luzon, south of Mindoro and north of Sulawesi, between 129 and 330 m.

Munida longispinata Baba, 1988

Munida longispinata Baba, 1988 : 82 (key), 114, figs 43-44.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2 : stn 36, 569-595 m : 1 ♂ 12.8 mm (MNHN-Ga 2503). — Stn 46, 445-520 m : 4 ♂ 8.2-13.8 mm; 1 ov. ♀ 14.0 mm; 1 ♀ 12.2 mm (MNHN-Ga 2504). — Stn 49, 416-425 m : 1 ♂ 14.3 mm; 1 ♀ 7.8 mm; 1 ov. ♀ 13.5 mm (MNHN-Ga 2505).

MUSORSTOM 3 : stn 122, 673-675 m : 1 ♂ 8.6 mm; 2 ov. ♀ 13.0, 13.8 mm (MNHN-Ga 2506). — Stn 123, 700-702 m : 2 ov. ♀ 15.5, 15.8 mm (MNHN-Ga 2507). — Stn 127, 464-475 m : 1 ov. ♀ 15.0 mm (MNHN-Ga 2508). —

Stn 135, 486-551 m : 1 ♂ 11.4 mm; 2 ov. ♀ 15.2, 17.7 mm (MNHN-Ga 2509). — Stn 138, 252-370 m : 1 ov. ♀ 14.6 mm (MNHN-Ga 2510). — Stn 145, 214-246 m : 1 ♀ 15.2 mm (MNHN-Ga 2511).

SIZE. — The males examined ranged between 8.2 and 14.3 mm, females between 7.8 and 17.7 mm; ovigerous females from 13.0 mm.

DISTRIBUTION. — Previously known from off southwestern Luzon and east coast of Mindoro and Mindanao Sea, Philippines (392-619 m). The present material was taken from south and southwest of Luzon, south of Mindoro and north of Panay, between 214 and 702 m.

Munida major Baba, 1988

Munida major Baba, 1988 : 83 (key), 118, figs 45-46.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2 : stn 38, 1650-1660 m : 1 ♂ 10.8 mm; 1 ov. ♀ 14.3 mm (MNHN-Ga 2512).

REMARKS. — The specimens examined agree quite well with the description and figures provided by BABA (1988). This species was recorded from the Sulu Sea and eastern Mindanao Sea, between 906 and 1350 m. The specimens from MUSORSTOM cruises were collected from south of Luzon, between 1650 and 1660 m.

Munida minuta sp. nov.

Fig. 3

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 3 : stn 117, 92-97 m : 4 ♂ 2.5-2.7 mm; 3 ov. ♀ 2.3-2.7 mm; 1 ♀ 2.7 mm (MNHN-Ga 2513, 2514).

TYPES. — The male of 2.7 mm from MUSORSTOM 3, Stn 117 (MNHN-Ga 2514) has been selected as holotype; the other specimens are paratypes.

ETYMOLOGY. — From the Latin, *minutus*, small.

DESCRIPTION (Holotype). — Carapace, without rostrum, slightly longer than wide. Secondary striae almost absent. Gastric region with row of 5 pairs of epigastric spines. One parahepatic spine on each side.

Frontal margins transverse. Anterolateral spine short, situated at anterolateral angle, not reaching sinus between rostrum and supraocular spines. Second marginal spine in front of cervical groove smaller than preceding one. Branchial margins with 4 spines quite similar in size.

Rostrum spiniform, less than half as long as remaining carapace, dorsally carinated, slightly curved and horizontal. Supraocular spines short not reaching end of corneae, subparallel and upwardly directed.

Thoracic sternites without striae.

Abdominal segments unarmed and without striae.

First and second abdominal segments each with pair of gonopods.

Eyes moderately large, maximum corneal diameter about one-third length of anterior border of carapace between bases of anterolateral spines.

Basal segment of antennule (distal spines excluded) overreaching corneae, with 2 subequal distal spines and 2 spines on lateral margin.

First segment of antennal peduncle with strong distomesial spine, slightly overreaching second segment; second segment with 2 distal spines, mesial longer than lateral and slightly overreaching third segment, one small median spinule on mesial margin; third segment unarmed.

Merus of third maxilliped bearing 2 well developed spines on flexor margin, proximal longer than distal; extensor margin with distal spine.

Chelipeds subequal, about 2.5 times as long as carapace; merus and carpus armed with rows of spines on mesial, dorsal and ventral borders; palm with row of mesial spines, numerous small spines on dorsal side, row of dorsolateral spines continuing onto fixed finger and reaching tip; movable finger with row of mesial spines reaching tip.

Walking legs slender. First walking leg nearly twice carapace length; merus with row of spines along dorsal border increasing in size distally, long distal spine and several projected striae on distal half of ventral margin; carpus with long distal spine on dorsal and ventral borders, 2 additional dorsal spines; propodus with row of 7-8 movable spines along ventral margin; dactylus long, slightly shorter than propodus, with 8 movable spinules along ventral margin. Second walking leg similar to first. Third walking leg shorter than first and second and less spinulated; merus about 3/4 that of first walking leg.

Epipods absent from all pereopods.

VARIATIONS. — No significant variations in the main characters have been observed among the specimens examined.

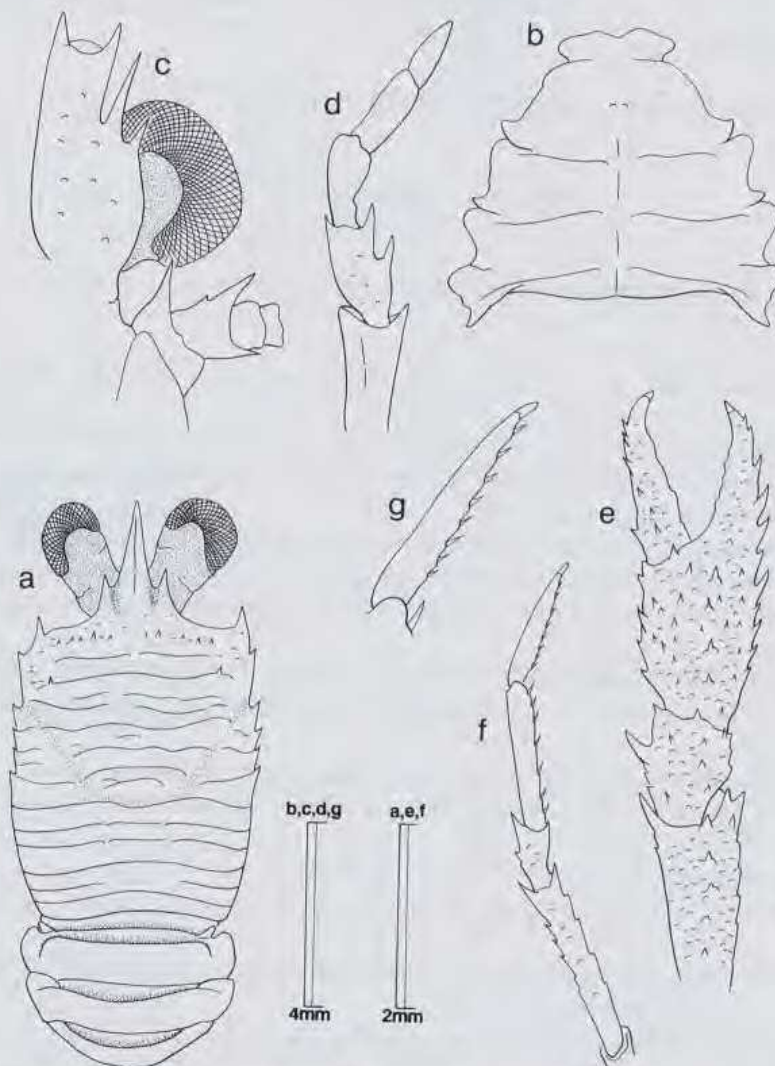


FIG. 3. — *Munida minuta* sp. nov., ♂, 2.7 mm, holotype from Stn 117 (MUSORSTOM 3): a, carapace, dorsal view; b, sternal plastron; c, ventral view of cephalic region, showing antennula and antennal peduncles; d, right third maxilliped, lateral view; e, left cheliped, dorsal view; f, right first walking leg, lateral view; g, dactylus of right first walking leg, lateral view.

REMARKS. — *M. minuta* is close to *M. pusiola* sp. nov. and *M. laevis* Macpherson & Baba, 1992, from the Philippines (MACPHERSON & BABA, 1992) in having the second abdominal segment unarmed, the sternum smooth and the extensor border of the merus of the third maxilliped with a distal spine. *M. minuta* and *M. pusiola* were collected in the same station but differ in several aspects :

- The frontal margins are transverse in *M. minuta*, oblique in *M. pusiola*.
 - The branchial margins have 4 spines in *M. minuta*, 5 spines in *M. pusiola*.
 - The second abdominal segment is smooth, without striae in *M. minuta*, with one transverse stria in *M. pusiola*.
 - The palm of the chelipeds has more dorsal spines in *M. minuta* than in *M. pusiola*.
- M. minuta* can be differentiable from *M. laevis* by the following aspects :
- The branchial margins have 4 spines in *M. minuta*, 5 spines in *M. pusiola*.
 - The movable finger of the cheliped has a row of lateral and mesial spines, respectively in *M. minuta*, one basal and one distal mesial spine in *M. laevis*.
 - In *M. laevis* the dactyli of the walking legs are unarmed on the distal third of the ventral border, with spines along this border in *M. minuta*.

DISTRIBUTION. — Philippines, west coast of Mindoro, between 92 and 97 m.

***Munida parvula* sp. nov.**

Fig. 4

MATERIAL EXAMINED. — Philippines. MUSORSTOM 3 : stn 121, 73-84 m : 1 ♂ 4.2 mm, holotype (MNHN-Ga 2515).

ETYMOLOGY. — From the Latin, *parvulus*, very small, in reference to the small size of the species.

DESCRIPTION. — Carapace, without rostrum, slightly longer than wide. Secondary striae present between main striae. Gastric region with row of epigastric spines, several additional spines just behind rostrum. One hepatic, one parahepatic and one postcervical spine on each side.

Frontal margins transverse. Anterolateral spine well developed situated at anterolateral angle, not overreaching sinus between rostrum and supraocular spines. Second marginal spine before cervical groove clearly smaller than preceding one. One small spine on the base of anterolateral spine. Branchial margins with 5 small spines quite similar in size.

Rostrum spiniform, dorsally carinated, half as long as remaining carapace, slightly curved and downwardly directed in terminal third. Supraocular spines short, clearly not reaching end of corneae, convergent and upwardly directed.

Fourth thoracic sternite with several short arcuate striae; fifth to seventh sternites without striae.

Second abdominal segment unarmed. Second to fourth abdominal segments each with several continuous transverse striae.

First and second abdominal segments each with pair of gonopods.

Eyes large, maximum corneal diameter about one-half length of anterior border of carapace between bases of anterolateral spines.

Basal segment of antennule (distal spines excluded) not overreaching corneae, with 2 distal spines, distomesial shorter than distolateral; 2 spines on lateral margin.

First segment of antennal peduncle with distomesial spine reaching end of second segment; second segment with 2 distal spines, mesial longer than lateral and slightly overreaching third segment; third segment unarmed.

Merus of third maxilliped bearing 2 well developed spines on flexor margin, proximal longer than distal; extensor margin with distal spine.

Left cheliped (right is missing) squamate, about 3.5 times as long as carapace; merus and carpus armed with rows of spines on mesial, dorsal and ventral borders; palm with mesial spines, row of small dorsal spines, and row

of lateral spines not continuing onto fixed finger; movable finger with basal and 2 distal spines; fixed finger with four distal spines.

Walking legs slender. First walking leg twice carapace length; merus with row of spines along dorsal border increasing in size distally, long distal spine and several projected striae on distal half of ventral margin; carpus with long distal spine on dorsal and ventral borders, 2 additional spines on dorsal margin; propodus with row of 14 movable spines along ventral margin; dactylus long, slightly shorter than propodus, with 11 movable spinules along ventral margin, distal fourth unarmed. Second walking leg similar to first. Third walking leg shorter than first and second and less spinulated; merus about one-half that of first walking legs.

Epipods absent from all pereopods.

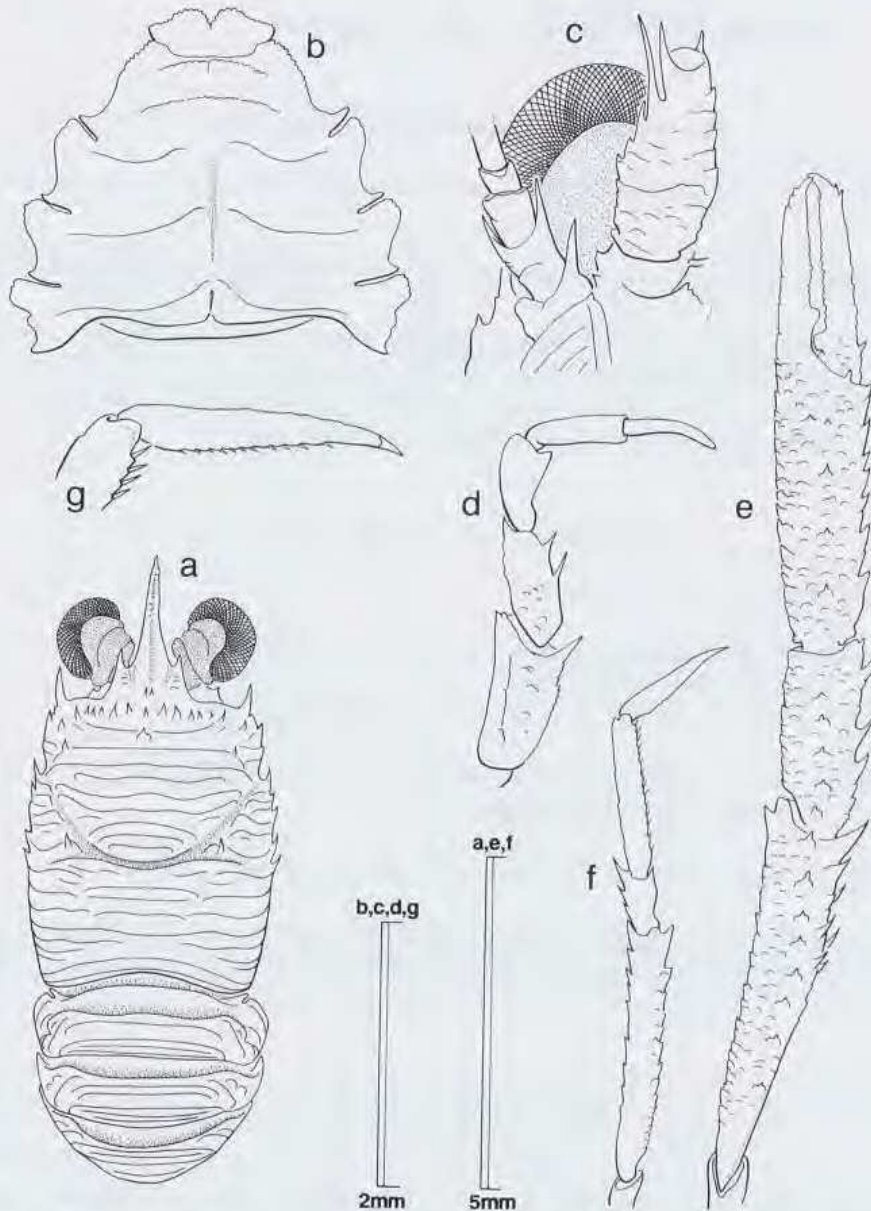


FIG. 4. — *Munida parvula* sp. nov., ♂, 4.2 mm, holotype from Stn 121 (MUSORSTOM 3): a, carapace, dorsal view; b, sternal plastron; c, ventral view of cephalic region, showing antennula and antennal peduncles; d, right third maxilliped, lateral view; e, left cheliped, dorsal view; f, right first walking leg, lateral view; g, dactylus of right first walking leg, lateral view.

REMARKS. — *M. parvula* is close to *M. laevis* Macpherson & Baba, 1992, from the Philippines, in having the second abdominal segment unarmed, the sternum smooth and the extensor border of the merus of the third maxilliped with a distal spine, but they differ in several aspects :

— The distomesial spine of the basal antennular segment is shorter than the distolateral in *M. parvula*, subequal in *M. laevis*.

— The distomesial spine of the second antennal segment clearly overreaches the antennal peduncle in *M. laevis*, only slightly overreaching the third antennal segment in *M. parvula*.

— The fixed finger of the chelipeds in *M. parvula* has only the terminal spines, instead of several spines along the lateral border in *M. laevis*.

DISTRIBUTION. — Philippines, south of Mindoro, between 73 and 84 m.

Munida pilorhyncha Miyake & Baba, 1966

Munida pilorhyncha Miyake & Baba, 1966 : 81, figs 1-2. — MIYAKE, 1982 : 149, pl. 50, fig 3. — BABA, 1988 : 82 (key), 122.

MATERIAL EXAMINED. — **Philippines**. MUSORSTOM 2 : stn 83, 318-320 m : 1 ♂ 15.4 mm (MNHN-Ga 2516).

REMARKS. — The specimen was collected in the Philippines, south of Mindoro. It agrees with the descriptions and figures provided by MIYAKE and BABA (1966), MIYAKE (1982) and BABA (1988). The lateral parts of the seventh thoracic sternites have no granules or ridges. The species is previously known from Tosa Bay, Japan, southwestern Kyushu and the Philippines, off Luzon, between 200 and 366 m.

Munida prominula Baba, 1988

Munida prominula Baba, 1988 : 84 (key), 124, fig. 47.

MATERIAL EXAMINED. — **Philippines**. MUSORSTOM 3 : stn 118, 448-466 m : 1 ♀ 6.9 mm (MNHN-Ga 2517). — Stn 119, 320-337 m : 1 ♀ 12.0 mm (MNHN-Ga 2518).

Indonesia. CORINDON 2 : stn 276, 395-450 m : 1 ♂ 11.2 mm (MNHN-Ga 2519).

REMARKS. — The specimens examined agree with the type description made by BABA (1988). The lateral parts of the seventh thoracic sternite have no granules or ridges.

SIZE. — The male examined measures 11.2 mm, females between 6.9 and 12.0 mm.

DISTRIBUTION. — BABA (1988) reported this species from off southwestern Taiwan, 421 m. The specimens examined were collected south of Mindoro (Philippines) and north of Sulawesi (Indonesia), between 320 and 450 m.

Munida pusiola sp. nov.

Fig. 5

MATERIAL EXAMINED. — **Philippines**. MUSORSTOM 3 : stn 117, 92-97 m : 9 ♂ 2.4-3.3 mm; 2 ov. ♀ 2.3, 2.8 mm; 11 ♀ 2.3-4.2 mm (MNHN-Ga 2520, 2521).

TYPES. — The male of 3.1 mm from MUSORSTOM 3, Stn 117 (MNHN-Ga 2521) has been selected as holotype; the other specimens are paratypes.

ETYMOLOGY. — From the Latin, *pusiola*, young girl, in reference to the small size of the species. The name is considered as a substantive in apposition.

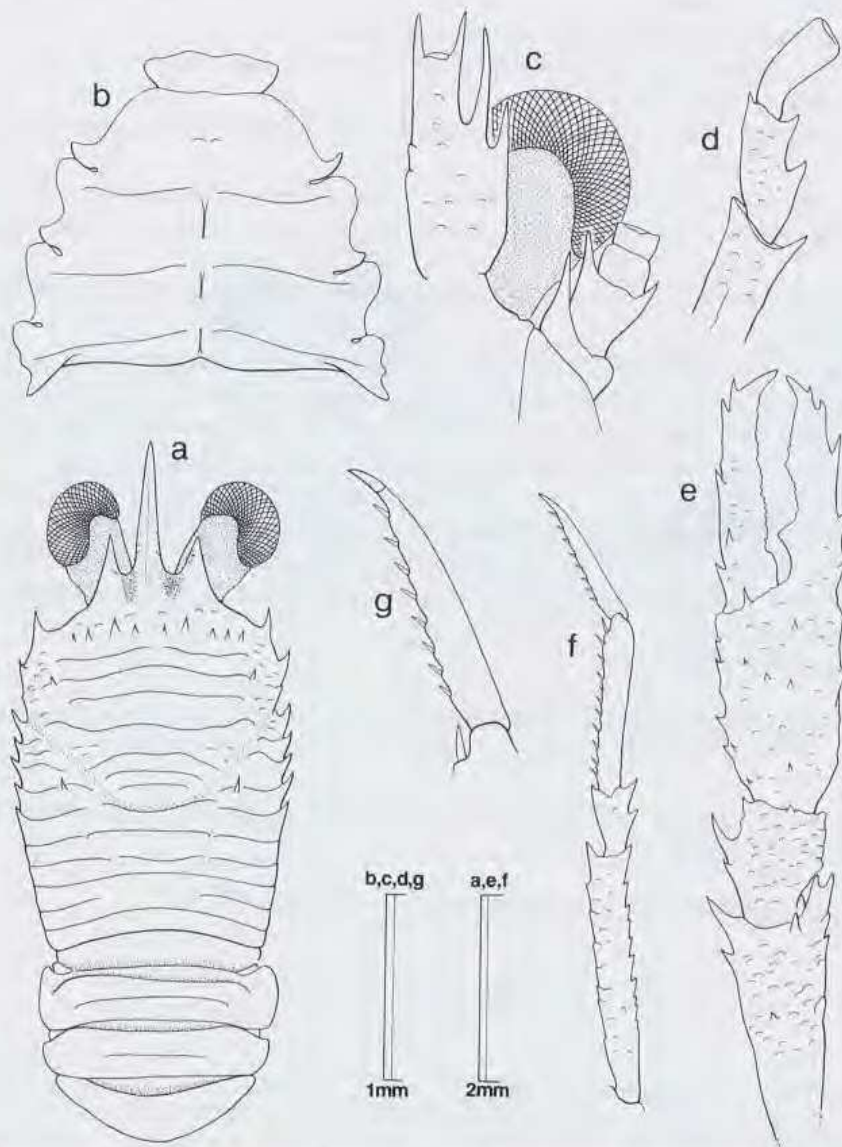


FIG. 5. — *Munida pusiola* sp. nov., ♂, 3.1 mm, holotype from Sin 117 (MUSORSTOM 3): a, carapace, dorsal view; b, sternal plastron; c, ventral view of cephalic region, showing antennula and antennal peduncles; d, right third maxilliped, lateral view; e, right cheliped, dorsal view; f, left first walking leg, lateral view; g, dactylus of left first walking leg, lateral view.

DESCRIPTION (Holotype). — Carapace, without rostrum, slightly longer than wide. Secondary striae between principal striae almost absent. Intestinal region without scales or striae. Gastric region with row of 9 epigastric spines. One parahepatic and one postcervical spine on each side.

Frontal margins oblique. Anterolateral spine well developed situated at anterolateral angle, not reaching sinus between rostrum and supraocular spines. Second marginal spine before cervical groove somewhat smaller than preceding one. Branchial margins with 5 spines quite similar in size.

Rostrum spiniform, dorsally carinated, half as long as remaining carapace, slightly curved, terminal third downwardly directed. Supraocular spines not reaching end of corneae, parallel and upwardly directed.

Fourth thoracic sternite with few short striae, other sternites without striae.

Second abdominal segment unarmed. Second and third segments each with one continuous transverse striae absent from fourth and fifth segments.

First and second abdominal segments each with pair of gonopods.

Eyes moderately large, maximum corneal diameter about one-third length of anterior border of carapace between bases of anterolateral spines.

Basal segment of antennule (distal spines excluded) slightly overreaching corneae, with 2 subequal distal spines and 2 lateral spines.

First segment of antennal peduncle with distomesial spine, slightly overreaching second segment; second segment with 2 distal spines, mesial longer than lateral, slightly overreaching third segment; third segment unarmed.

Merus of third maxilliped with 2 well developed spines on flexor margin, proximal longer than distal; extensor margin with distal spine.

Chelipeds subequal. Right cheliped about 2.5 times as long as carapace; merus and carpus armed with rows of spines on mesial, dorsal and ventral borders; palm with several mesial and dorsal spines, row of dorsolateral spines continuing onto fixed finger and reaching tip; movable finger with row of spines along mesial border reaching tip.

Walking legs slender. First walking leg slightly less than twice carapace length; merus with row of spines along dorsal border increasing in size distally, long distal spine on ventral margin; carpus with long distal spine on dorsal and ventral borders, additional spine on dorsal margin; propodus with 11-12 movable spines along ventral margin; dactylus long, slightly shorter than propodus, with 8 movable spinules along ventral margin. Second walking leg similar to first. Third walking leg shorter than first and second and less spinulated; merus about three-quarters that of first walking legs.

Epipods absent from all pereopods.

VARIATIONS. — No significant differences in the main characters have been observed between the holotype and the paratypes.

REMARKS. — *M. pusiola* is close to *M. minuta* sp. nov. from the Philippines; their relationships are discussed under Remarks of the latter (see above).

DISTRIBUTION. — Philippines, west coast of Mindoro, between 92 and 97 m.

Munida sacksi sp. nov.

Fig. 6

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2 : stn 75, 300-330 m : 1 ov. ♀ 13.4 mm (MNHN-Ga 2522).

New Caledonia. MUSORSTOM 4 : stn 241, 22°09.0'S, 167°12.2'E, 470-480 m, 03.10.1985 : 1 ♂ 9.1 mm; 1 ♀ 9.7 mm (MNHN-Ga 3399). — Stn 242, 22°05.8'S, 167°10.3'E, 500-550 m, 03.10.1985 : 1 ov. ♀ 10.7 mm; 3 ♀ 9.1-10.6 mm (MNHN-Ga 3400).

TYPES. — The ovigerous female of 13.4 mm from MUSORSTOM 2, Stn 75 (MNHN-Ga 2522) has been selected as holotype; the other specimens are paratypes.

ETYMOLOGY. — This species is dedicated to R. SACKS, from ICSEAF (International Commission for the Southeast Atlantic Fisheries), for his continuous and valuable assistance in my work.

DESCRIPTION (Holotype). — Carapace with numerous secondary striae between principal striae. Some scales on intestinal region. Gastric region with row of epigastric spines. One parahepatic and one postcervical spine on each side.

Frontal margins quite transverse. Anterolateral spine well developed situated on frontal margins near anterolateral angle, not reaching sinus between rostrum and supraocular spines. Second marginal spine on

anterolateral angle somewhat smaller than preceding one. One small spine between both spines. Branchial margins with 5 spines decreasing in size posteriorly.

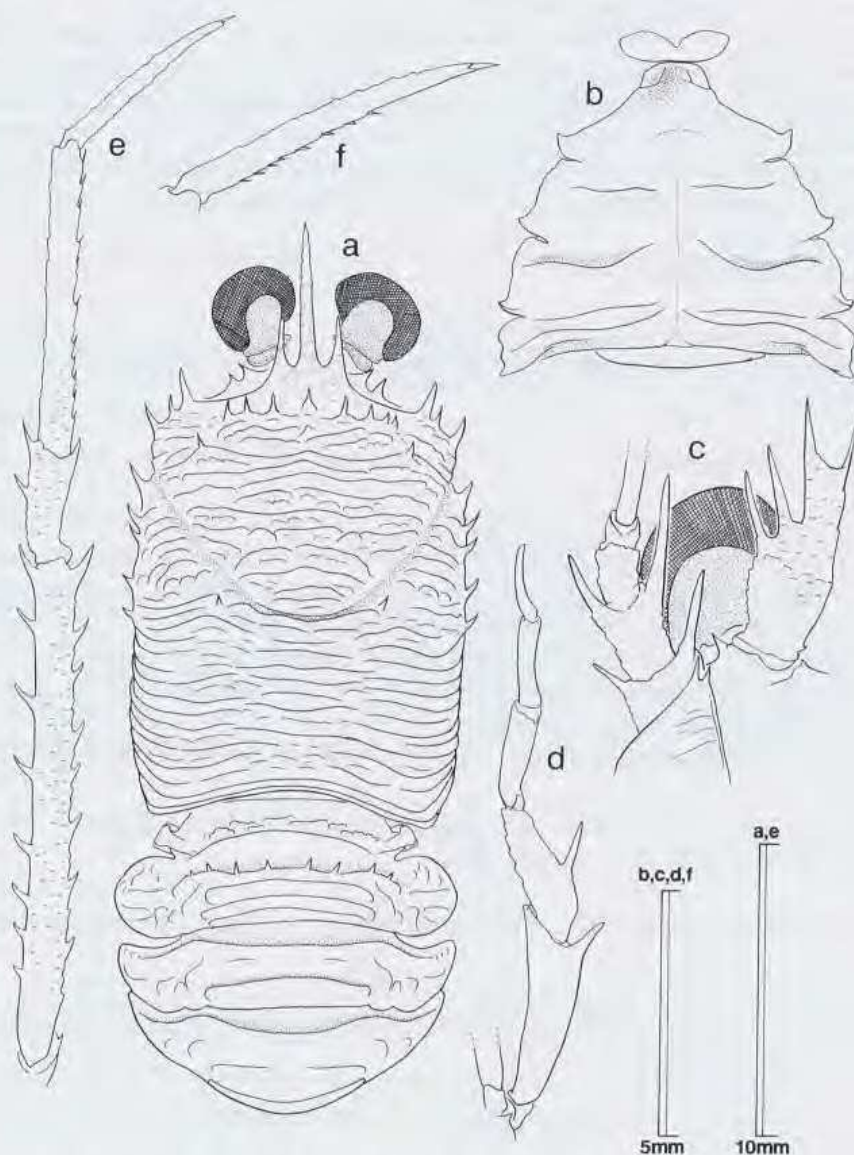


FIG. 6. — *Munida sacksi* sp. nov., ov. ♀, 13.4 mm, holotype from Stn 75 (MUSORSTOM 2): a, carapace, dorsal view; b, sternal plastron; c, ventral view of cephalic region, showing antennula and antennal peduncles; d, right third maxilliped, lateral view; e, right first walking leg, lateral view; f, dactylus of right first walking leg, lateral view.

Rostrum spiniform, slightly less than half as long as remaining carapace, slightly sinuous and horizontal. Supraocular spines not reaching end of corneae, subparallel and upwardly directed.

Fourth thoracic sternite with few short arcuate striae; other sternites without striae.

Second abdominal segment with row of 8 spines on anterior ridge. Second to fourth abdominal segments each with several transverse striae.

Eyes large, maximum corneal diameter more than one-third length of anterior border of carapace between bases of anterolateral spines.

Basal segment of antennule (distal spines excluded) overreaching corneae, with 2 distal spines, distomesial slightly shorter than distolateral; 2 spines on lateral margin.

First segment of antennal peduncle with strong distal spine on mesial and lateral margins, mesial longer than lateral and overreaching second segment; second segment with 2 long distal spines, mesial longer than lateral, overreaching antennal peduncle; third segment unarmed.

Merus of third maxilliped with one well developed spine on flexor margin; extensor margin unarmed.

Chelipeds missing. Walking legs slender. First walking leg nearly 3 times carapace length; merus with row of spines on dorsal and ventral borders increasing in size distally; carpus with long distal spine on dorsal and ventral borders, several additional spines on dorsal margin; propodus with row of 11 movable spines on ventral margin; dactylus long, 2/3 propodus length, slightly curving distally, with 8 movable spinules along ventral margin, distal third unarmed. Second walking leg similar to first. Third walking leg shorter than first and second; merus about one-half that of first walking leg.

Epipods absent from all pereopods.

VARIATIONS. — The male has the first and second abdominal segments each with 1 pair of gonopods. The chelipeds (broken) are present in one specimen, having a row of spines along the mesial and lateral borders of the movable and fixed fingers respectively.

REMARKS. — Additional specimens of this species were found in New Caledonia after its discovery in the Philippines.

M. sacksi is closely related to *M. africana* Doflein & Balss, 1913, from the south of Somalia (for the redescription of this species see MACPHERSON, 1991) in having five spines on the branchial margins of the carapace, the anterior ridge of the second abdominal segment with a row of spines and the extensor border of the merus of the third maxilliped unarmed. They differ in the following characters :

— The frontal margins are clearly more oblique in *M. africana* than in the new species.

— The distomesial spine of the second antennal segment in the new species clearly overreaches the antennal peduncle, whereas in *M. africana* this spine is shorter.

— The merus of the third maxilliped of *M. africana* has 2 well developed spines on the flexor margin, only one in the new species.

— In the new species, the dactylus of the walking legs are unarmed on the distal third of the ventral border. In *M. africana* the spines are present along the ventral margin.

SIZE. — The male examined measures 9.1 mm, females between 9.1 and 13.4 mm; ovigerous females from 10.7 mm.

DISTRIBUTION. — The Philippines, southwest coast of Luzon, New Caledonia, between 300 and 550 m.

Munida spinulifera Miers, 1884

Munida spinulifera Miers, 1884 : 279, pl. 31, fig. b. — TIRMIZI & JAVED, 1976 : 85, fig. 4. — BABA, 1988 : 83 (key).

MATERIAL EXAMINED. — **Indonesia**. CORINDON 2 : stn 268, 200 m : 2 ♂ 6.0, 7.8 mm (MNHN-Ga 3217).

REMARKS. — The specimens examined agree quite well with the redescription and figures provided by TIRMIZI & JAVED (1976). Some additional information on this species is here included : the fourth thoracic sternite has few striae, the other sternites are smooth; the number of dorsal spines on the second and third abdominal segments ranges between 8-9 and 4-6, respectively; the basal antennular segment clearly overreaches the cornea and the distolateral spine is longer than the distomesial; the chelipeds are long and slender, the fixed finger has a row of spines along the lateral border and the movable finger has one basal and one distal spine; the distal third of the ventral border of the dactylus of the walking legs is unarmed.

The species was previously known only from the type locality (Arafura Sea); these specimens were collected north of Sulawesi.

Munida variabilis Baba, 1988

Munida variabilis Baba, 1988 : 82 (key), 134, figs 51-52.

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2 : stn 36, 569-595 m : 2 ♂ 11.8, 15.0 mm (MNHN-Ga 2523). — Stn 44, 760-820 m : 1 ♂ 12.6 mm (MNHN-Ga 2524). — Stn 46, 445-520 m : 2 ♂ 9.7, 15.6 mm; 1 ov. ♀ 14.6 mm (MNHN-Ga 2525).

MUSORSTOM 3 : stn 101, 673-675 m : 7 ♂ 10.0-19.0 mm; 4 ♀ 5.8-9.3 mm; 4 ov. ♀ 14.5-17.3 mm (MNHN-Ga 2526). — Stn 123, 700-702 m : 2 ♂ 13.4, 14.7 mm; 1 ov. ♀ 19.2 mm; 5 ♀ 9.3-19.8 mm (MNHN-Ga 2527).

SIZE. — The males examined ranged between 9.7 and 19.0 mm, females between 5.8 and 19.8 mm; ovigerous females from 14.5 mm.

DISTRIBUTION. — The present material was collected in the Philippines, south and southwest of Luzon, south of Mindoro and north of Panay, between 445 and 820 m. BABA (1988) recorded this species from the same localities, between 514 and 924 m.

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